

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Claims 1-57 (Cancelled)

58. (Currently amended) A material for controlling flow of a fluid to ~~maintain~~regulate a ~~desired~~ temperature of an object, the material comprising:

an outer layer;

an inner layer; and

gel particles comprising reversible hydrophilic and hydrophobic ~~properties~~
constituents and disposed in the inner layer, the gel particles for controlling flow of the fluid through the inner layer to regulate the temperature of an object in contact with the inner layer by the gel particles expanding when the fluid in contact with the gel particles is below a phase transition temperature of the gel particles and contracting when the fluid in contact with the gel particles is below ~~[[a-]]~~ the phase transition temperature of the gel particles.

Claims 59-62 (Cancelled)

63. (Currently amended) The material of claim 58, wherein the object is ~~[[the-]]~~ skin of a human body.

Claim 64 (Cancelled)

65. (Previously presented) The material of claim 58, wherein the inner layer comprises a foam material.

66. (Previously presented) The material of claim 58, wherein the outer layer comprises neoprene.

67. (Previously presented) The material of claim 58, further comprising a second outer layer outside of the outer layer.

68. (Currently amended) The material of claim 58, wherein the gel particles are hydrogel particles having a VPFCT-phase transition temperature in the range of about 18°C to about 25°C.

69. (Currently amended) The material of claim 58, wherein the inner layer comprises gel particles in an amount approximately 5% to 80% by weight of total dry weight of ~~[[the-]]~~a matrix.

70. (Previously presented) The material of claim 58, wherein the gel particles comprise poly(N-isopropylacrylamide).

71. (Previously presented) The material of claim 70, wherein the gel particles comprise a hydrophobic monomer.

72. (Previously presented) The material of claim 71, wherein the hydrophobic monomer is N-tert-butylacrylamide.

Claims 73-74 (Cancelled)

75. (Previously presented) The material of claim 58, wherein the material is incorporated in a wetsuit.

Claims 76-77 (Cancelled)

78. (New) The material of claim 71, wherein the hydrophobic monomer lowers the phase transition temperature of the gel particles.

79. (New) The material of claim 70, wherein the gel particles comprise an ionizable monomer.

80. (New) The material of claim 79, wherein the ionizable monomer comprises at least one of sodium acrylate, acrylic acid, or 2-acrylamido-2-methylpropanesulfonic acid.

81. (New) The material of claim 79, wherein the ionizable monomer increases the phase transition temperature of the gel particles.

82. (New) The material of claim 58, wherein the gel particles undergo a reversible volume change within less than about a 0.1°C of the phase transition temperature of the gel particles.

83. (New) A material for regulating a temperature of an object, the material comprising:
an outer layer;
an inner layer; and

gel particles comprising reversible hydrophilic and hydrophobic constituents and disposed in the inner layer, the gel particles adapted to have a phase transition temperature approximate to a desired temperature of the object.